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FOREST INSECT INVESTIGATIONS

SUGAR HILL FIRE STUDY TREES

MODOC NATIONAL FOREST

PROGRESS REPORT, SEASON OF 1931

by

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Progress Report, Season of 1931

One hundred and fifty-five fire-injured trees were selected by Person in 1929 in order to study the problem of death or recovery of fire-injured trees in relation to insect infestation subsequent to fire injury. This study was inaugurated to aid in solving the problem of salvage selection of injured but living trees by discovering what types of fire-injured trees had the best chance of surviving the fire injury and subsequent insect attack.

Reports on the initial selection of the trees in 1929 and the records taken during 1930 have been made by Person[1,2].

An examination of the trees selected for this study was made by the regional survey crew in June, 1931. At this time notes were taken concerning the condition of all the study trees, and cores were taken from all those that had died since the initiation of the project. These cores have been measured, but the records will be retained for inclusion in the final report of this study.

Records and Notes

Tables 1 and 2 list the trees that have been killed by insects since July 1929, and give the characteristic fire injury to each tree as well as the injury class. See preceding reports on this study for an explanation of the terms and the classification.

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1. Person, H.L. Preliminary Report on Fire Study Plots, Sugar Hill Fire, Modoc N.F., May 17, 1930. File Typescript.
2. Person, H.L. Progress Report on Fire Study Trees, Sugar Hill Fire, Modoc N.F., November 1930. File Typescript.

TABLE 1

Insect Losses, Willow Creek Fire Plot

Year	Inj. Class	Tree No.	Volume	Cause of Death	% Crown Injury	Area of Fire-Killed Cambium
1929	V	15	790	FH-RH[3]	98	0-15' S½ to 2/3
		17	790	D.b.	85	0-10' S side
		18	180	FH-RH	100	0-10'
	III	97	2,000	D.b.	40	0-1' S side, extending old fissure
		38	140	D.b.	70	None
	IV	7	410	D.b.	60	S side 15' around old fissure
1930		8	260	D.b.	85	None at base; apparently some around lower branches
	V	19	990	D.b.	100	0-20' S side
		23	1,630	FH	50	W½ up to 8'
		33	560	D.b.-FH	90	None
		34	1,500	FH-RH	85	0-10' all around except narrow strip
	IV	39	120	D.b.	75	None
1931 Inc.	V	98	3,300	D.b.	90	0-6' extending old fissure; 1/3 base dead
	V	99	2,000	D.b.	90	0-18' around 2 old fissures; 1/6 base dead

TABLE 2

Insect Losses, Lassen Creek Fire Plot

Year	Inj. Class	Tree No.	Volume	Cause of Death	% Crown Injury	Area of Fire-Killed Cambium
	III	137	290	D.b.	30	0-8' S side around old fissure
		109	120	D.m.-FH	95	None
1930	V	114	50	D.b.	90	0-18' S side around old fissure
		136	120	D.b.-FH	90	0-6' except 6" strip S side
1931 Inc.	V	103	140	D.b.	95	None

[3]FH - Flathead borers; RH - Roundhead borers; D.b. - Dendroctonus brevicomis Lec.; D.m. - D. monticolae Hopk.

The following table summarizes that given above and shows the per cent of the total number of trees and volume of the study trees in each fire-injury class that have been killed since the start of the study:

Table III
Summary of Willow Creek Fire Plot Losses

Injury Class	Year	No. Trees	% Total in Class	Volume	% Total in Class
III	1930	1	3.57	2,000	8.09
IV	1930	2	9.52	550	3.41
	1931	1	4.76	120	0.74
	Total	3	14.29	670	4.15
V	1929	3	8.33	1,760	7.09
	1930	5	13.89	4,940	19.90
	1931	2	5.55	5,300	21.34
	Total	10	27.78	12,000	48.33

Table IV
Summary of Lassen Creek Fire Plot Losses

Injury Class	Year	No. Trees	% Total in Class	Volume	% Total in Class
III	1930	1	6.25	290	2.30
V	1930	3	37.5	290	23.58
	1931	1	12.5	140	11.38
	Total	4	50.00	430	34.96

Discussion of Results

Although enough information has not yet been gathered to justify definite conclusions concerning the chances of living trees in the various fire-injury classes, hard the following tentative conclusions may be reached on the basis of the information gathered to date. It is evident that the more badly injured trees have less chance of living, as insect attack occurs more frequently in the Class V trees than in the other classes. Flathead and roundhead borer injury is apparently responsible for the final death blow in trees that have been so badly injured by fire that their continued life was doubtful. In some cases Dendroctonus brevicomis attacks have evidently been made on trees in no danger of dying from fire injury alone.

Twelve of the 19 trees that have died on the two plots since the fire were killed by D.brevicomis alone; two by that insect and flathead borers; one by D.monticolae and flathead borers; and four by flathead and roundhead borers.

Recommendations

The project has not been continued for a long enough period to yield definite results; and accordingly it is recommended that a detailed analysis of the data and the formulation of definite conclusions be withheld until the losses for 1933 are completely recorded.

Cruises should be made each year to inspect all the trees on the plot, record the losses and condition of the green trees and secure cores of trees killed since the preceding cruise.

At the completion of the study in 1934 cores should be taken from all the living trees remaining, and final notes made of all trees that have been included in the study.